GENERAL

This SPECIFICATION provides a description for the TEAC FD-55GFR, 5.25", high/normal densities, double sided mini flexible disk drive (hereinafter referred to as the FDD). Table 100 shows the outline of the FDD.

Model name	FD-55GFR-340	FD-55GFR-440	FD-55GFR-540
TEAC P/N	19307273-40	19307274-40	19307275-40
Safety standard on label	-	UL	UL & CSA
Unformatted data capacity	1.6M/1.0M bytes		
Track density	96tpi		
Head load mechanism	Not equipped (CSS)		
Front bezel shape	TEAC standard		
Front lever shape	TEAC standard		
Bezel & lever color	Black		
LED indicator color	Red		
Pop-up mechanism	Not equipped		
Shield cover	Not equipped		
Frame ground terminal	Faston 187 tab		
Input signal terminator	330Ω ± 5% on IC socket		
Customer selectable straps	D0 ∿ D3, U0, U1, IU, ML, RY, DC2, LG, E2, I/II/IS, FG Refer to item 1-11.		
Strap setting at shipment	D1, U1, DC2, II, FG		
Other optional functions & mechanism	Not equipped		

(Table 100) Specification outline

PHYSICAL SPECIFICATION

(1) Width: 146mm (5.75 in), Nom.

(2) Height: 41.3mm (1.63 in), Nom.

(3) Depth: 203mm (7.99 in), Nom.
(excludes projections of interface connectors)

(4) Weight: 1.1Kg (2.43 lbs), Nom., 1.2Kg (2.65 lbs), Max.

(5) External view: See Fig.101

(6) Cooling: Natural air cooling

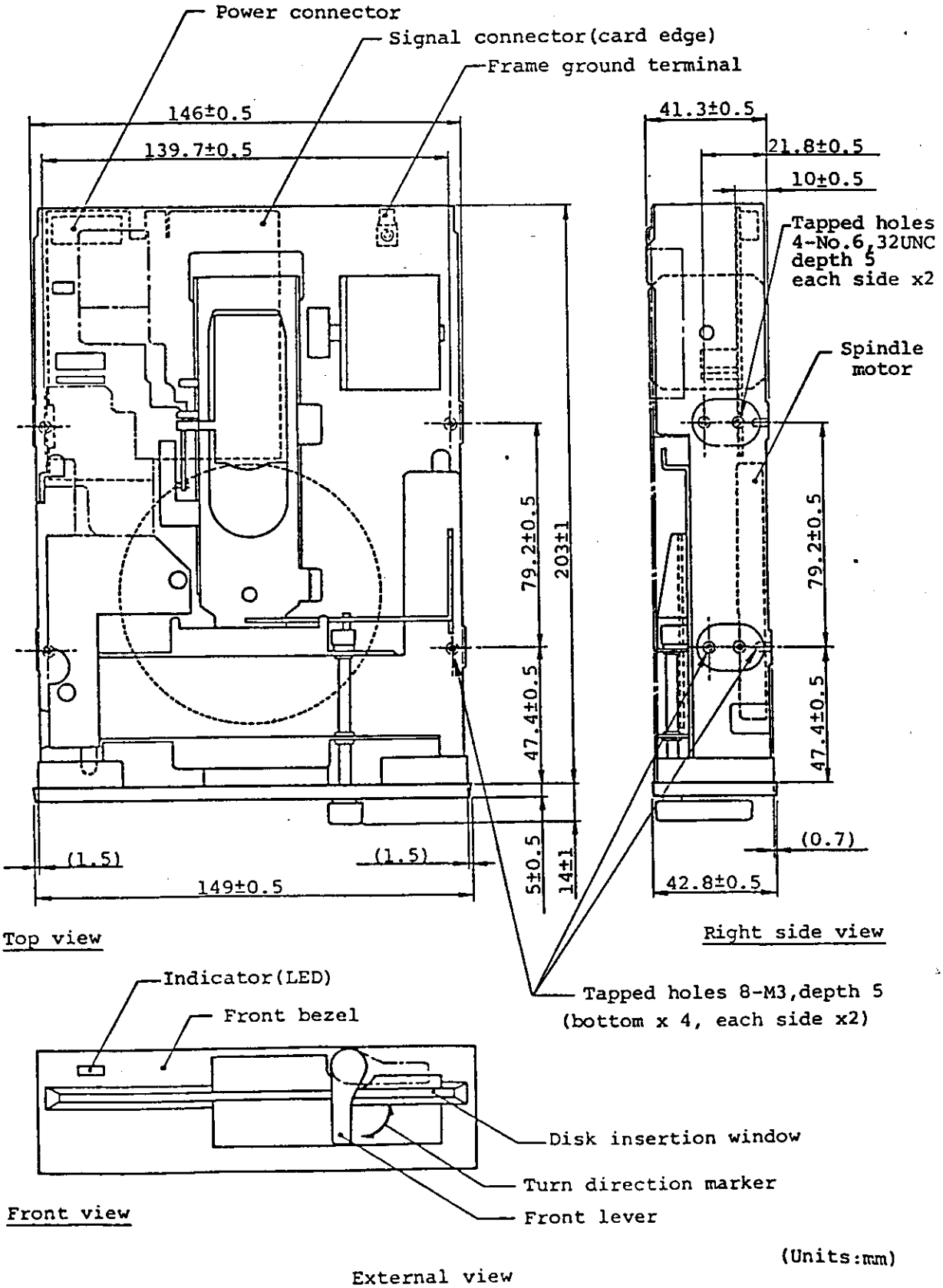
(7) Mounting: Mounting for the following directions are acceptable.

(a) Front loading, mounted vertically.
(b) Front loading, mounted horizontally with indicator up. Do not mount horizontally with spindle motor up.
(c) Mounting angle in items (a) and (b) should be less than 15° with front bezel up.

Note: As to the other mounting directions than the above will be considered separately.

(8) Installation: With installation holes on the side frame or on the bottom frame of the FDD (See Fig.101).

(9) Material, Frame: Aluminum diecast
Front bezel: PPHOX (Xyron)



(Units:mm)

External view

(a) Typical at operating: 4.1W

(b) Typical at waiting: 1.5W

(4) Power on sequence

Not specified (refer to Note below). Since the FDD is equipped with power reset circuit, disk and data on the disk will not be damaged by power on or off.

Note: If +12V power is turned on more than 320msec after the +5V power, auto-recalibration might not be executed. In such a case, execute ordinary recalibrate operation by commands from host side after turning on both powers.

(5) Power reset time in FDD: Less than 400msec,
Including general power resetting of internal circuit and auto-recalibration.

ENVIRONMENTAL CONDITIONS

(1) Ambient temperature

(a) Operating: 4°C ∿ 46°C (40°F ∿ 115°F)

(b) Storage: -22°C ∿ 60°C (-8°F ∿ 140°F)

(c) Transportation: -40°C ∿ 65°C (-40°F ∿ 149°F)

(2) Temperature gradient

(a) Operating: Less than 15°C (27°F) per hour

(b) Transportation and storage: Less than 30°C (54°F) per hour

(3) Relative humidity

(a) Operating: 20% ∿ 80% (no condensation)

Maximum wet bulb temperature shall be 29°C (84°F)

(b) Storage: 10% ∿ 90% (no condensation)

Maximum wet bulb temperature shall be 40°C (104°F)

(c) Transportation: 5% ∿ 95% (no condensation)

Maximum wet bulb temperature shall be 45°C (113°F)

(4) Vibration

(a) Operating: Less than 0.5G (less than 55Hz)

Less than 0.25G (55 ∿ 500Hz)

(b) Transportation: Less than 2G (less than 100Hz)

(5) Shock

(a) Operating: Less than 10G (less than 10msec)

(b) Transportation: Less than 40G (less than 10msec)

(6) Altitude

(a) Operating: Less than 5,000m (16,500 feet)

(b) Transportation: Less than 12,000m (40,000 feet)

Note: The above requirements are applied for the FDD without shipping box. When a long period is required for transportation such as by ship, the storage environmental conditions shall be applied.

RELIABILITY

(1) MTBF: 10,000 power on hours or more (for typical usage)

(2) MTTR: 30 minutes

(3) Design component life: 5 years

(4) Preventive maintenance: Not required (for typical usage)

(5) Error rates

(a) Soft read error: 1 per 10^9 bits (up to 2 retries)

(b) Hard read error: 1 per 10^{12} bits

(c) Seek error: 1 per 10^6 seeks

(6) Safety standard: Complying with UL, CSA

Warning: EMI/RFI countermeasure

This FDD generates and uses radio frequency energy. If the FDD (including the interface cable and connector) is used without shielding, it may cause interference to radio and television reception around it. Be sure to install this FDD in the equipment which is designed for effective EMI/RFI countermeasure.

This FDD installed in a specific equipment has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation.

However, there is no guarantee that interference will not occur in a particular installation. If the equipment with this FDD does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measure.

a) Reorient the receiving antena.

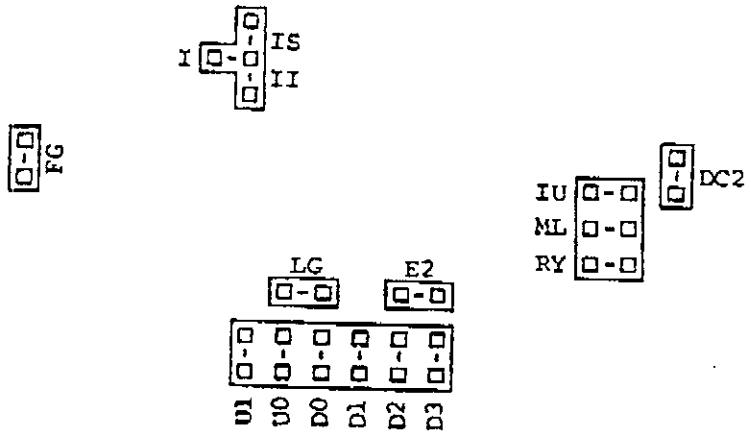
b) Relocate the equipment with respect to the receiver.

c) Move the equipment away from the receiver.

d) Plug the equipment into a different outlet so that the equipment and the receiver are on different branch circuits.

CUSTOMER SELECTABLE STRAPS

All the straps are mounted on the main PCBA of the FDD. Insertion of a short bar onto the post pin is defined as the on-state of the strap. Fig.110 shows the assignment of the straps on the PCBA.



Assignment of straps

OUTLINE

This specification provides a description for the TEAC FD-55GFR, 5.25", high /normal densities, double sided mini flexible disk drive (hereinafter referred to as the FDD).

Model name	FD-55GFR-7149	FD-55GFR-7193	FD-55GFR-7220
TEAC P/N	19307671-49	19307671-93	19307672-20
Bezel & lever color	Gray (PC-AT)	Beige (PS2)	Black
Safety standard on label	UL & CSA		
Unformatted data capacity	1.6M/1M bytes		
Track density	96tpi		
Head load mechanism	Not equipped. (CSS)		
Front bezel shape	TEAC standard		
Front lever shape	TEAC standard		
LED indicator color	Green		
Pop-up mechanism	Not equipped.		
Shield cover	Not equipped.		
Input signal terminator	1kΩ ± 5%, unremovable		
Customer selectable straps	D0~D3, U0, U1, IU, RY/DC, LG, E2, I		
Strap setting at delivery	D1, DC		
Other optional function	Not equipped.		

PHYSICAL SPECIFICATION

(1) Width: 146mm (5.75 in), Nom.

(2) Height: 41.3mm (1.63 in), Nom.

(3) Depth: 203mm (7.99 in), Nom.
(excludes projections of interface connectors)

(4) Weight: 1.00kg (2.20 lbs), Nom., 1.10kg (2.43 lbs), Max.

(5) External view: See Fig.1.

(6) Cooling: Natural air cooling

(7) Mounting: Mounting for the following directions are acceptable.

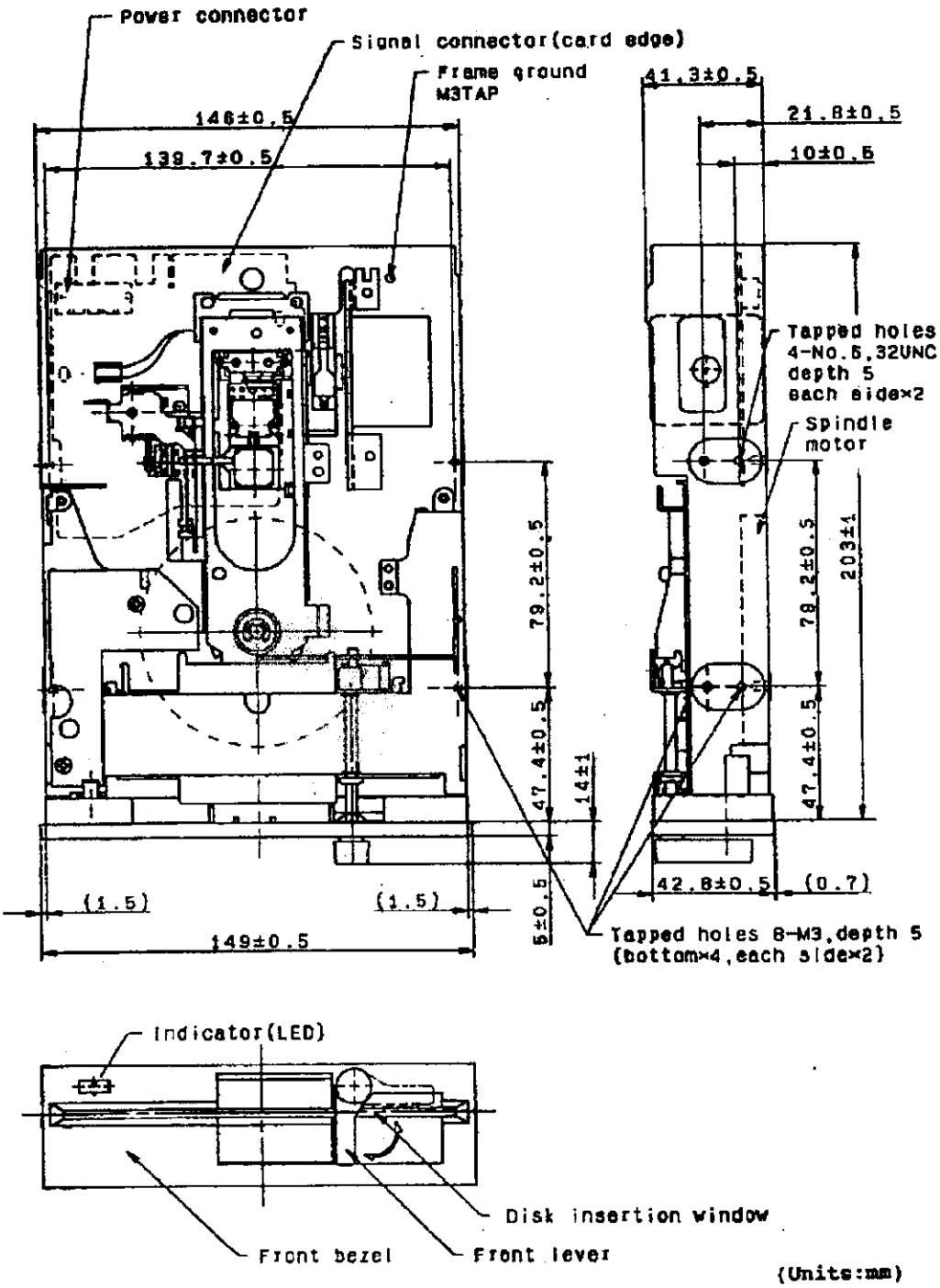
(a) Front loading, mounted vertically.
(b) Front loading, mounted horizontally with spindle motor down.
(c) Mounting angle in items (a) and (b) should be less than 15° with front bezel up.

Note: As to the other mounting directions than the above will be considered separately.

(8) Installation: With installation holes on the frame of the FDD.
Refer to Fig.1.

(9) Material of frame: Aluminum diecast

(10) Material of front bezel: PPHOX (Xyron)


Power connector
Signal connector(card edge)
Frame ground
M3TAP
146±0.5
139.7±0.5
41.3±0.5
21.8±0.5
10±0.5
Tapped holes
4-No.6,32UNC
depth 5
each side×2
Spindle
motor
79.2±0.5
47.4±0.5
14±1
203±1
5±0.5
(1.5)
(1.5)
149±0.5
42.8±0.5
(0.7)
Tapped holes 8-M3,depth 5
(bottom×4,each side×2)
Indicator(LED)
Disk insertion window
Front bezel
Front lever

(Units:mm)

ENVIRONMENTAL CONDITIONS

Note: The following requirements are applied for the unpackaged FDD.

(1) Ambient temperature
  (a) Operating : 4 ~ 46°C(39 ~ 115°F)
  (b) Storage : -22 ~ 60°C(-8 ~ 140°F)
  (c) Transportation: -40 ~ 65°C(-40 ~ 149°F)
(2) Temperature gradient
  (a) Operating : 15°C(27°F) or less per hour
  (b) Storage and transportation
  : 30°C(54°F) or less per hour
(3) Relative humidity
  (a) Operating : 20 ~ 80% (no condensation)
  Max. wet bulb temperature shall be 29°C(84°F)
  (b) Storage : 10 ~ 90% (no condensation)
  Max. wet bulb temperature shall be 40°C(104°F)
  (c) Transportation: 5 ~ 95% (no condensation)
  Max. wet bulb temperature shall be 45°C(113°F)
(4) Vibration
  (a) Operating : 0.5G or less (55Hz or less)
  0.25G or less (55 ~ 500Hz)
  (b) Transportation: 2G or less (100Hz or less)
(5) Shock
  (a) Operating : 5G (11msec) or less
  (b) Transportation: 50G (11msec) or less
(6) Altitude
  (a) Operating: Less than 5,000m (16,500 feet)
  (b) Transportation: Less than 12,000m (40,000 feet)

Note: The above requirements are applied for the FDD without shipping box. When a long period is required for transportation such as by ship, the storage environmental condition shall be applied.

RELIABILITY

(1) MTBF: 20,000 power on hours or more (for typical operation duty)
(2) MTTR: Less than 30 minutes
(3) Design component life: 5 years
(4) Disk life: 3×10^6 passes/track or more
(5) Disk insertion: 3×10^4 times or more
(6) Preventive maintenance: Not required (for typical operation duty)
(7) Error rate
  (a) Soft error: 1 per 10^9 bits (up to 2 retries)
  (b) Hard error: 1 per 10^{12} bits
  (c) Seek error: 1 per 10^6 seeks
(8) Safety standard: Complying with UL and CSA

FD55 GFR-7XXX
Strap (jumper) definition.

LG strap:

Strap to select the logical meaning of the Hi/Normal DENSITY input signal level at interface line #2.

LG Strap	OFF		ON	
Density Mode	HI	LOW	HI	LOW
I/F #2 signal level	HI	LOW	LOW	HI

For an AT compatible system LG should be set to the OFF state.

I strap:

Strap to select the rotational speed mode of the FDD for the HI and LOW density modes.

Mode	SINGAL		DUAL	
I Strap	OFF		ON	
Density Mode	HI	LOW	HI	LOW
RPM (Motor speed)	360	360	360	300

For the correct setting of this strap refer to your controller card's documentation.

E2 Strap:

Strap to select the output condition of the INDEX and the READ DATA pulses.

E2 off state:
Index - Index hole detection * DRIVE selected * Ready state * Seek complete.
READ Data - Read data detection * DRIVE selected * Ready state * Not writing * Seek complete.

E2 on state:
Index - Index hole detection * DRIVE selected * Ready state.
READ Data - Read data detected * DRIVE selected * Ready state * Not writing.

** Note: Set the E2 strap to the ON state only if your computer requires MASKING THE INDEX. (ie. PC and older PCXT that do not give the drive enough time to reach a ready state when the disk replaced.

FD55 GFR-7XXX
Strap (jumper) definition.

D0 - D3 straps:

Drive Select (address) 0 thru 3.
With a twisted interface cable, both the "A:" and "B:" drives should be set for D1. The "A:" drive should be connected to the twisted end and the "B:" drive to the untwisted connector. On an untwisted cable the position of the drives is not defined, however the "A:" drive should be set at D2 and the "B:" drive set at D1. ** Note: With an untwisted cable you may have to short lines 10 and 16 together to turn the spindle motor on when the drive is selected.

U0 and U1 straps:

Setup one of 5 possible LED (indicator) turn on conditions.
It is best to use condition #1 for an AT system.

Cond #	Strap-combination			Indicator turn on conditions
	IU	U0	U1	
1	--	--	--	Drive Select
2	ON	--	--	Drive Select + In Use
3	ON	ON	--	In Use (see IU strap)
4	--	ON	ON	Drive Select * Ready
5	ON	ON	ON	In Use + (Drive Select * Ready)

(+) means OR condition. (*) means AND condition.
(--) means off.

IU strap:

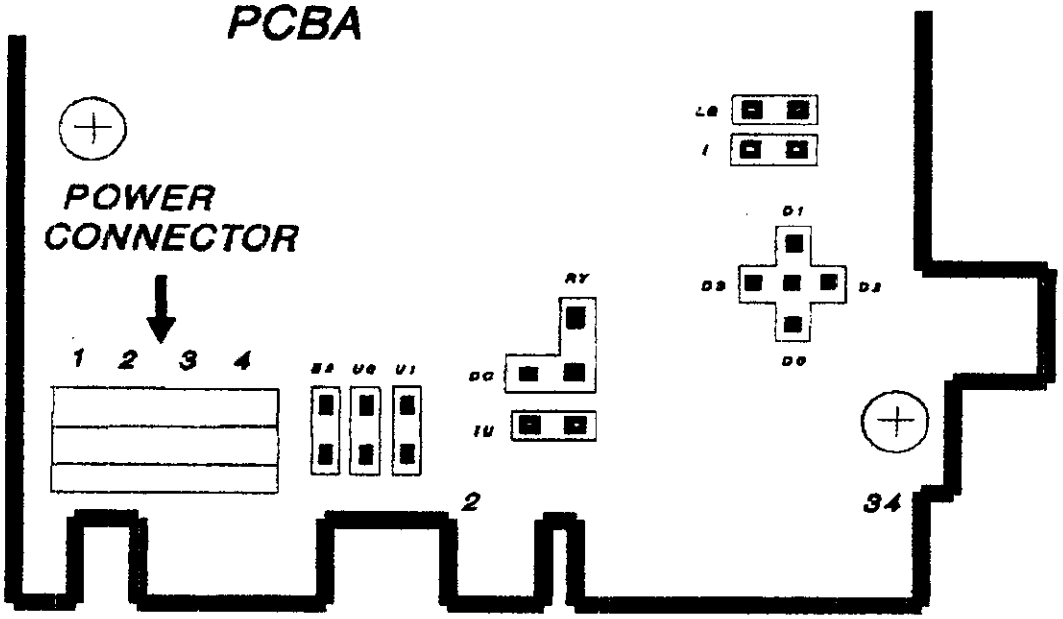
Strap to make the signal interface #4 be used for the IN USE input signal. ON state
The signal interface line #4 is open when the strap is off state.

RY & DC straps:

Straps to select the output signal at interface line #34.
RY on state outputs the READY signal.
DC on state outputs the DISK CHANGE signal.
The disk change signal is the required signal for line #34 when connected to an AT compatible system.

FD55 GFR-7XXX series FDD
Strap (jumper) definition

› *Strap (jumper) location on the printed circuit board.*



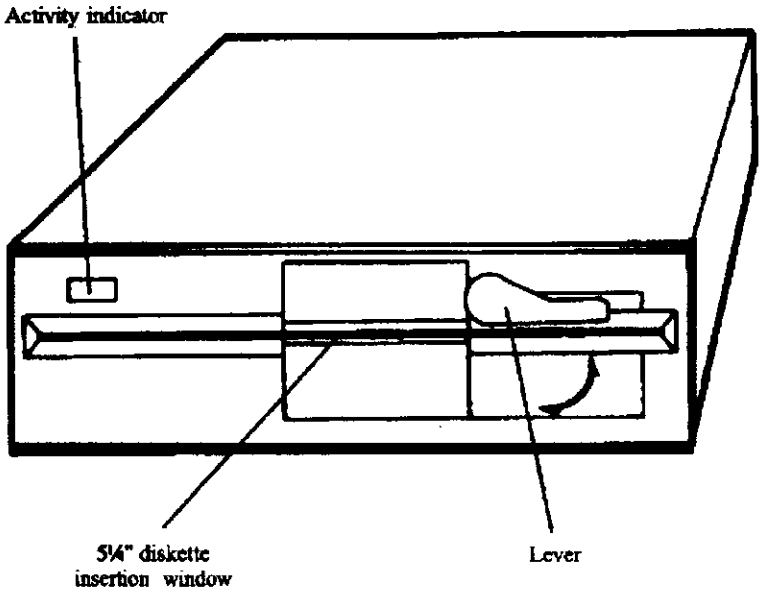
› *The factory strap (jumper) settings are:*

D1 - Drive Select #1
DC - Disk change signal output at line #34

This configuration will enable the drive to work as either an "A:" drive or a "B:" drive. If the INTERFACE cable has a twist at the end.

› *Power connector:* *#1 - 12 vdc*
#2 & #3 - 0vdc, ground
#4 - 5 vdc

TEAC FD-55 Series
5¼" 1.2 MB Floppy Disk Drive
hstallation Guide



Your FD-55 package includes:

- ☑ FD-55 floppy disk drive
- ☑ Installation guide

Introduction

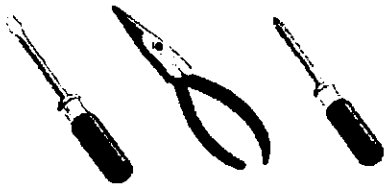
Thank you for purchasing the TEAC FD-55 Series 1.2 MB floppy disk drive. This product is intended for use in IBM@ PC/XT/AT@ and compatible computers.

This quality drive will provide trouble-free operation for your computer system if properly installed. PLEASE READ THE ENTIRE INSTALLATION GUIDE THOROUGHLY BEFORE YOU BEGIN THE INSTALLATION. If you have questions or comments on the installation, please call TEAC Technical Support Center at the telephone number listed on the back page of this Guide.

Tools You May Need

Depending on the design of your computer, you may need the following tools to complete the installation.

- ☑ a flat blade screwdriver
- ☑ a Phillips screwdriver
- ☑ needle-nosed pliers



Handling the FD-55 Series 5¼" Drive

Your FD-55 series drive must be handled with care. Avoid applying undue force or abnormal strain to the spindle motor, stepping motor or printed circuit board. Avoid placing your fingers on the **printed circuit board.** It is best to hold the FD-55 by the **diecast frame, as** indicated by the arrows in figure A.

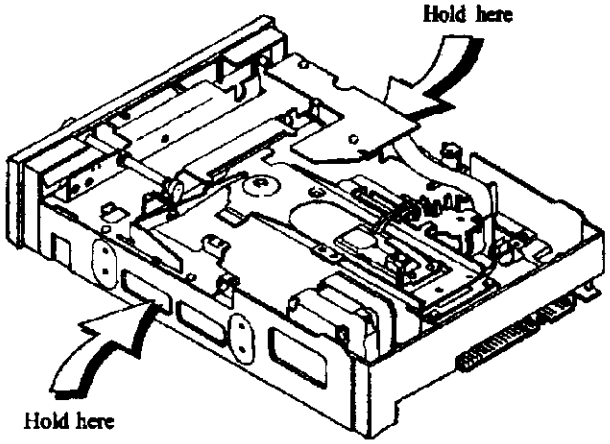


Figure A

Preparing your Personal Computer for FD-55 Floppy Drive Installation

CAUTION: TURN OFF YOUR COMPUTER AND UNPLUG IT FROM THE AC POWER SOURCE BEFORE INSTALLING THE FD-55. FAILURE TO DO SO MAY RESULT IN ELECTRIC SHOCK.

1. Unplug your computer.
2. Detach all input and output devices from your computer, such as printer, keyboard, monitor, etc.
3. Remove cover from your computer. Refer to your computer system manual for this procedure.
4. If you are replacing a current floppy. Note the cables that are connected to your floppy disk drive, as these same cables will be required to install your FD-55. The floppy interface cable is the flat "ribbon" type, and the power connector consists of the 4 separate wires attached to a single connector. See figure B.
5. Your system may also have a single ground wire attached to the floppy disk drive. Carefully remove all cables from your floppy disk drive.
6. Install the FD-55 floppy disk drive into an available drive bay.

Rear View of FD-55

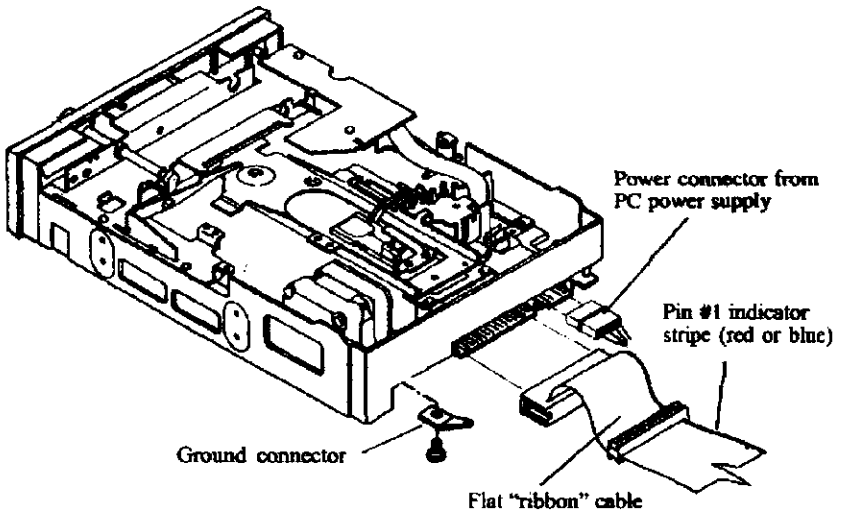


Figure B

Configuring for A: or B: drive

Using an standard IBM PC compatible cable with a twist at the end connector (figure C) and the **factory default strap settings** (shown in figure D).

a) To configure as your A: drive connect the FD-55 floppy drive to **Connector A:** on the flat "ribbon" cable. **Connector A:** is the end connector of the cable as shown in the sketch.

b) To configure as your B: drive connect the FD-55 floppy drive to **Connector B:** on the flat "ribbon" cable. **Connector B:** is the middle connector of the cable as shown in the sketch.

c) Verify jumpers are set as indicated in figure D.

d) Connect the ground cable if your system requires it.

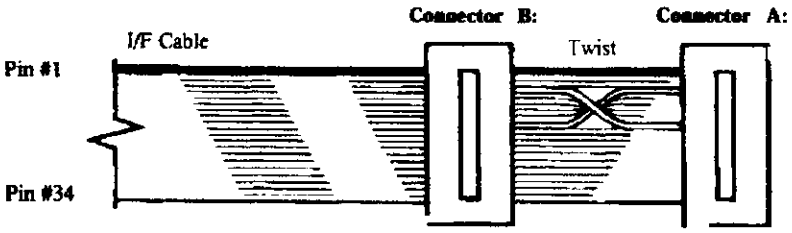


Figure C

Note: Be sure to make the correct changes to the CMOS BIOS setup after you install you FD-55.

FD-55 Jumper Matrix

Factory defaults are shaded.

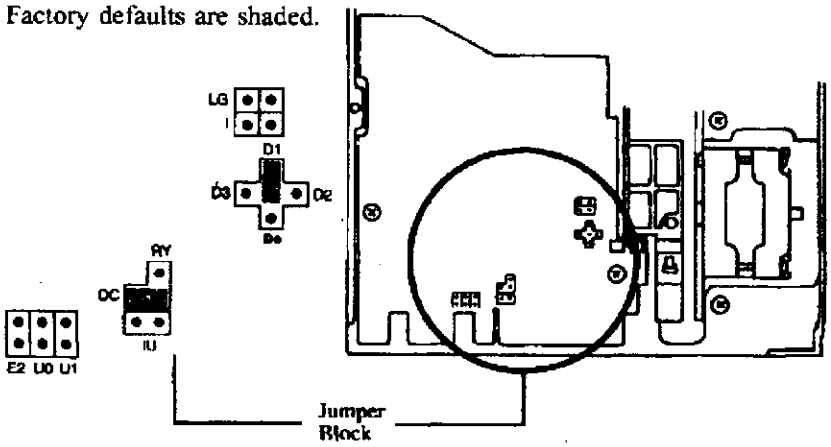


Figure D

Notes on Installing Your FD-55

Slide drive into any available bay.

Locate your system's floppy drive ribbon cable. The cable may be keyed to assist with alignment. If yours is not keyed, it should be attached so that the color strip (red or blue) faces the power connector located on the rear of the FD-55 drive. This is Pin 1.

1. Re-attach power connector.
2. Replace the cover.
3. Re-attach all input and output devices.
4. Plug in computer.

Attaching Mounting Rails, if required

Your system may or may not require mounting rails to install the FD-55 floppy drive.

If rails are required, use rails from disk drive that is being replaced, or contact your local distributor and/or TEAC parts department (ext. 840) for mounting rails.

The tapered end of each rail, when mounted, should point toward the back of the FD-55 floppy drive as shown in figure E.

Note: Each rail is marked on the inside surface with "R" indicating the right rail, or "L" for the left rail.

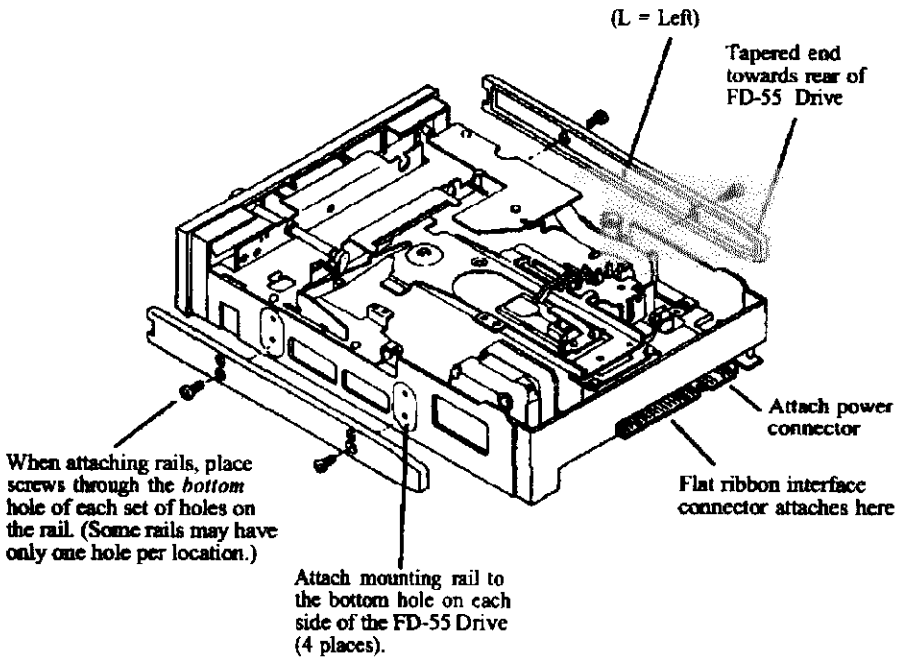

(L = Left)
Tapered end towards rear of FD-55 Drive
Attach power connector
Flat ribbon interface connector attaches here
When attaching rails, place screws through the *bottom* hole of each set of holes on the rail. (Some rails may have only one hole per location.)
Attach mounting rail to the bottom hole on each side of the FD-55 Drive (4 places).

Figure E

Trouble Shooting

Symptom	Solution
Indicator light never turns on when executing READ or WRITE.	Make sure that the interface cable and power cable are properly connected and drive address strap is set correctly.
Indicator light comes on as soon as power is applied and stays on.	The ribbon cable may be reversed. Check pin #1 orientation.
Drive type mismatch during boot.	Check CMOS setup for correct drive type. If the indicator comes on, check for head recalibration to Track 00; if it doesn't, drive may be malfunctioning.
Invalid media or Track 00 bad when formatting.	Attempted to format an HD diskette to 360K or DD diskette to 1.2 MB. Drive is not properly set in CMOS setup. Or controller card is not configured correctly. Check setup by referring to controller documentation.
The same directory is displayed for different diskettes.	Controller card is not receiving disk change signal. Check the drive for the correct disk change strap setting. Pin #34 on the ribbon cable is broken. Or disk drive is malfunctioning.
Drive not ready error reading drive X.	No diskette inserted in the drive or motor not spinning. Drive may need service.
General failure error reading drive X.	Diskette not formatted. Drive out of alignment. LD or ND disk formatted to 1.2 MB. HD disk formatted for 360K. Use correct disk.
Sector not found error.	Head seek error or drive out of alignment.

TEAC Tech Support: To have installation guides, specification sheets, and other product information faxed to you, **7** days a **week, 24 hrs.** a day, call our Fax on Demand Line at 323-**727-7629.**

TEAC America, Inc., 7733 Telegraph Rd., Montebello, CA 90640
323-726-0303 ext 860

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